



5654

# SHARP-CUTOFF PENTODE

MINIATURE TYPE

*Intended for RF and IF Broad-Band Applications where dependable performance under shock and vibration are paramount. The 5654 is a 'premium' version of the 6AX5.*

5654  
PREMIUM TYPE

## GENERAL DATA

### Electrical:

Heater, Pure Tungsten, for Unipotential Cathode:

Voltage . . . . .  $6.3 \pm 10\%$  . . . . . ac or dc volts  
Current . . . . . 0.175 . . . . . amp

Direct Interelectrode Capacitances:<sup>▲</sup>

Grid No.1 to Plate . . . . . 0.020 max. . . . .  $\mu\text{f}$   
Input . . . . . 4.0 . . . . .  $\mu\text{f}$   
Output . . . . . 2.85 . . . . .  $\mu\text{f}$

### Mechanical:

Mounting Position . . . . . Any  
Maximum Overall Length . . . . . 1-3/4"  
Maximum Seated Length . . . . . 1-1/2"  
Length from Base Seat to Bulb Top  
(Excluding tip) . . . . . 1-1/8"  $\pm 3/32$ "  
Maximum Diameter . . . . . 3/4"  
Bulb . . . . . T-5-1/2  
Base . . . . . Small-Button Miniature 7-Pin (JETEC No.E7-1)

### BOTTOM VIEW

Pin 1 - Grid No.1  
Pin 2 - Cathode,  
Grid No.3,  
Int. Shield  
Pin 3 - Heater  
Pin 4 - Heater



Pin 5 - Plate  
Pin 6 - Grid No.2  
Pin 7 - Cathode,  
Grid No.3,  
Int. Shield

## AMPLIFIER - Class A<sub>1</sub>

### Maximum Ratings, Absolute Values:

PLATE VOLTAGE . . . . . 200 max. volts  
GRID-No.2 (SCREEN) VOLTAGE . . . . . 155 max. volts  
PLATE DISSIPATION . . . . . 1.85 max. watts  
GRID-No.2 INPUT . . . . . 0.55 max. watt  
CATHODE CURRENT . . . . . 20 max. ma  
PEAK HEATER-CATHODE VOLTAGE:  
Heater positive with respect to cathode . . . . . 100 max. volts  
Heater negative with respect to cathode . . . . . 100 max. volts

### Typical Operation and Characteristics:

Plate Voltage . . . . . 120 180 volts  
Grid-No.2 Voltage . . . . . 120 120 volts

<sup>▲</sup> According to RTMA Standard ET-109A with external shield No.316.

JAN. 1, 1953

TUBE DEPARTMENT  
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA

5654



5654

## SHARP-CUTOFF PENTODE

|                                                                    |      |      |            |
|--------------------------------------------------------------------|------|------|------------|
| Cathode-Bias Resistor . . . . .                                    | 180  | 180  | ohms       |
| Plate Resistance (Approx.) . . .                                   | 0.30 | 0.50 | megohm     |
| Transconductance . . . . .                                         | 5000 | 5100 | $\mu$ mhos |
| Plate Current . . . . .                                            | 7.5  | 7.7  | ma         |
| Grid-No.2 Current . . . . .                                        | 2.5  | 2.4  | ma         |
| Grid-No.1 Voltage (Approx.)<br>for plate current of 10 $\mu$ amp . | -8.5 | -8.5 | volts      |

### Maximum Circuit Values:

|                                        |          |        |
|----------------------------------------|----------|--------|
| Grid-No.1-Circuit Resistance . . . . . | 0.5 max. | megohm |
|----------------------------------------|----------|--------|

### SPECIAL RATINGS & PERFORMANCE DATA

#### Shock Rating:

|                                                                                                                                                         |          |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---|
| Impact Acceleration . . . . .                                                                                                                           | 500 max. | g |
| Tubes are held rigid in three different positions in a Navy Type, High Impact (flyweight) Shock Machine and are subjected to 500 g impact acceleration. |          |   |

#### Fatigue Rating:

|                                                                                                                                            |          |   |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------|---|
| Vibrational Acceleration . . . . .                                                                                                         | 2.5 max. | g |
| Tubes are rigidly mounted and subjected in each of three positions to 2.5 g vibrational acceleration at 60 cycles per second for 32 hours. |          |   |

#### Heater Cycling Life Performance:

|                                                                                                                                                                                                                        |           |        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------|
| Cycles of Intermittent Operation . . . .                                                                                                                                                                               | 2000 min. | cycles |
| Under the following conditions: With heater voltage of 7.5 volts cycled 1 minute on and 1 minute off, heater positive with respect to cathode by +100 volts dc, and plate, grid-No.2, and grid-No.1 voltage = 0 volts. |           |        |

### CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

|                                             | Note | Min.  | Max.  |            |
|---------------------------------------------|------|-------|-------|------------|
| Heater Current . . . . .                    | 1    | 0.160 | 0.190 | amp        |
| Grid-No.1-to-Plate<br>Capacitance . . . . . | -    | -     | 0.020 | $\mu$ f    |
| Input Capacitance . . . . .                 | -    | 3.4   | 4.6   | $\mu$ f    |
| Output Capacitance . . . . .                | -    | 2.45  | 3.25  | $\mu$ f    |
| Plate Current . . . . .                     | 1,2  | 3.0   | 12.0  | ma         |
| Transconductance . . . . .                  | 1,2  | 3500  | 6500  | $\mu$ mhos |
| Reverse Grid Current . . . . .              | 1,3  | -     | 0.1   | $\mu$ amp  |

Note 1: With 6.3 volts ac on heater.

Note 2: With plate voltage of 120 volts, grid-No.2 voltage of 120 volts, and grid-No.1 voltage of -2 volts.

Note 3: With plate voltage of 120 volts, grid-No.2 voltage of 120 volts, grid-No.1 voltage of -2 volts, and grid-No.1 resistor of 0.1 megohm.

### CURVES

are the same as shown for Type 6AK5  
in the Receiving Tube Section

JAN. 1, 1953

TUBE DEPARTMENT  
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

TENTATIVE DATA